

I CLAIM:

1. A device for position indication and the detection of guidance errors, comprising:

a scale comprising:

a position measuring graduation arranged in a position measurement direction;

a first guidance error measuring graduation which is arranged perpendicularly with respect to the position measurement graduation;

a second guidance error measuring graduation which is arranged perpendicularly with respect to the position measurement graduation, wherein the first guidance error measuring graduation and the second guidance error measuring graduation are arranged on both sides of and adjacent to the position measuring graduation;

a position indication scanning unit movable with respect to the scale, wherein the position indication scanning unit scans the position measuring graduation for generating position measurement signals;

a guidance error scanning unit that is movable with respect to the scale, wherein the guidance error scanning unit scans the first guidance error measuring graduation for generating guidance error measurement signals.

2. The device in accordance with claim 1, wherein the first guidance error measuring graduation has a graduation period identical to the position measuring graduation and extend over an entire measurement distance.

3. The device in accordance with claim 1, wherein the first guidance error measuring graduation and the second guidance error measuring graduation each has a graduation period identical to the position measuring graduation and extend over an entire measurement distance.

4. The device in accordance with claim 1, wherein the position measuring graduation and the first guidance error measuring graduation are arranged on the surface of a common support element.

5. The device in accordance with claim 1, wherein the position measuring graduation and the first guidance error measuring graduation are each embodied as reflecting measuring graduations.

6. The device in accordance with claim 1, wherein the position indication scanning unit and the first guidance error scanning unit are embodied to be identical and are arranged vertically with respect to each other.

7. The device in accordance with claim 1, wherein the position indication scanning unit comprises:

- a light source that emits beams of light;
- a scanning graduation;
- a retro-reflection component; and
- a detector element.

8. The device in accordance with claim 1, wherein the guidance error scanning unit comprises:

- a light source that emits beams of light;
- a scanning graduation;
- a retro-reflection component; and
- a detector element.

9. The device in accordance with claim 7, wherein the guidance error scanning unit comprises:

- a light source that emits beams of light;
- a scanning graduation;
- a retro-reflection component; and
- a detector element.

5 10. The device in accordance with claim 7, wherein the guidance error scanning unit is arranged with respect to the first guidance error measuring graduation in such a way that the beams of light emitted by the light source first pass through the scanning graduation, thereafter impinge on the first guidance error measuring graduation and are reflected back from there in the direction of the retro-reflection component, which reflects the incident beams of light back in the direction of the first guidance error measuring graduation, from where again a reflection in the direction toward the scanning graduation takes place before the beams of light impinge on the detector element.

15 11. The device in accordance with claim 8, wherein the guidance error scanning unit is arranged with respect to the first guidance error measuring graduation in such a way that the beams of light emitted by the light source first pass through the scanning graduation, thereafter impinge on the first guidance error measuring graduation and are reflected back from there in the direction of the retro-reflection component, which reflects the incident beams of light back in the direction of the first guidance error measuring graduation, from where again a reflection in the direction toward the scanning graduation takes place before the beams of light impinge on the detector element.

20 25 12. The device in accordance with claim 9, wherein the guidance error scanning unit is arranged with respect to the first guidance error measuring graduation in such a way that the beams of light emitted by the light source first pass through the scanning graduation, thereafter impinge on the first guidance error measuring graduation and are reflected back from there in the direction of the retro-reflection component, which reflects the incident beams of light back in the direction of the first guidance error measuring graduation, from where again a reflection in the direction toward the scanning graduation takes place before the beams of light impinge on the detector element.

13. The device in accordance with claim 10, wherein the respective widths of the first and second guidance error measuring graduations and of the position measuring graduation are dimensioned perpendicularly with respect to the position measurement direction, so that an identically embodied position indication scanning unit and guidance error scanning unit can be used.

14. The device in accordance with claim 11, wherein the respective widths of the first and second guidance error measuring graduations and of the position measuring graduation are dimensioned perpendicularly with respect to the position measurement direction, so that an identically embodied position indication scanning unit and guidance error scanning unit can be used.

15. The device in accordance with claim 12, wherein the respective widths of the first and second guidance error measuring graduations and of the position measuring graduation are dimensioned perpendicularly with respect to the position measurement direction, so that an identically embodied position indication scanning unit and guidance error scanning unit can be used.

16. The device in accordance with claim 10, wherein the position indication scanning unit and the guidance error scanning unit are arranged in a common housing, which is arranged, movable with respect to the scale, in the position measurement direction.

17. The device in accordance with claim 11, wherein the position indication scanning unit and the guidance error scanning unit are arranged in a common housing, which is arranged, movable with respect to the scale, in the position measurement direction.

18. The device in accordance with claim 12, wherein the position indication scanning unit and the guidance error scanning unit are arranged in

a common housing, which is arranged, movable with respect to the scale, in the position measurement direction.

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